

# Issues in postgraduate supervision – a gender aspect.

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## Abstract

Reaching a good gender balance in tenure positions within scientific subjects is an important goal for the University of Bergen. Women are reasonably represented at a bachelor, master and PhD level, though the figures decrease along the way, but very few women are employed in tenure positions. There are clearly some biological processes that might be a major cause to this “sieving” effect. However, another cause might be the way postgraduate female and male students are supervised.

Group teaching has been strongly advocated by women themselves as a teaching and supervising form that is “gender friendly”, however groups might have a complex dynamical behaviour. This is emphasized by a comparative study conducted within a postgraduate group of students within Applied Mathematics, University of Bergen. This essay is written in conjunction with the course ”Veiledning på master og PhD nivå” for the completion of the course in basic university pedagogy.

## Background

One of the strategic goals for the University of Bergen for the period 2006-2010 is to reach a good gender balance in tenure positions within scientific subjects. This is in fact the common goal for a number of Norwegian and other western universities, upon realizing a very skewed gender representation (OECD 1998). Only few Mediterranean countries, Greece, Italy and Spain, show a more balanced gender representation at a tenure level, although parity is not achieved there either.

The reason for this skewed representation is not fully understood. In Norway, women are well represented at an undergraduate level. 48 percent of the graduate students were female, while only 17 per cent of the faculty members were women in 1991 (OECD 1998, Lie and Mailk 1994). The percent is even lower in natural science subjects.

Universities are in general criticised for being male bastions, discriminating against women (Acker 1983; Reid 1987; Bagilhole 1993; Park 1996; Hagedorn 1999). At post-graduate level, female PhD students are more likely than their male counterparts to withdrawals and delays in PhD completions, and get a research position afterwards less often (Scroeder and Mynatt 1993; Tvede 1994). Therefore it has been argued that it is important to raise the number of female faculty members for an academic career (Gilbert et al. 1983; Davis and Austin 1990; Rothstein 1995) and most researchers advocate same-gender supervisors for female students.

However, reviewing the research literature reveals arguments which both support and contradict the assumption that female supervisors are important for supporting the academic careers of female graduate students. The main question whether the supervisor's gender matters for female students is considered in (Smeby, 2000): data support the assumption and reveal that the tendency is stronger among female than among male students and supervisors. Others emphasise that the main challenge is to develop more gender friendly environments (Iversen 1996; Hagedorn 1999).

A strategy recently suggested to increase the chances of completion has been to develop groups enabling students to discuss their progress and present their findings to peers or to peers and supervisors. However, research into gender and communications suggests that groups, often dominated by men, may not adequately serve the educational needs of women (Conrad and Phillips 1995). Memory-work's type research into gender learning indicates that a key cognitive component is emotion and appraisal (Ingleton 1995). Feelings like being exposed, being different, being chosen, being included, expectations and comprehending the rules are significant components in learning. Though such emotions are universally experienced, their expression is moulded and shaped by society.

In this work we are interested in studying some of the dynamics arising in two forms of supervision of postgraduate students: the more recent strategy based on group supervision with peers and the classical one-to-one supervision form (apprentice form). Within the author's subject (applied mathematics), these are quite common supervision

techniques, the first being used in larger groups, the latter in groups with a small number of students, whose PhD topics might be far apart.

We are also interested in understanding the role of female faculty members in the context of postgraduate supervision, and whether their presence motivates female students for an academic career.

### **A comparative study**

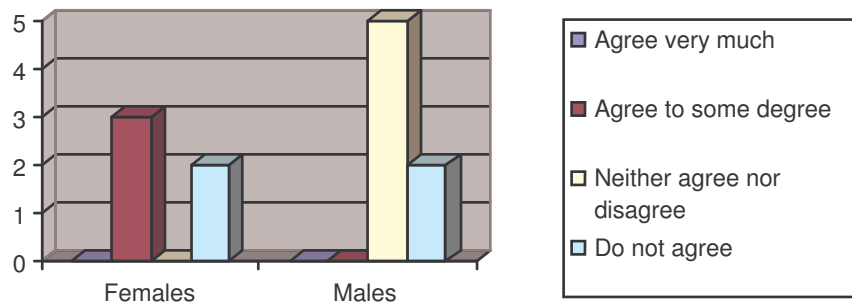
We have conducted a comparative study within postgraduate students in Applied Mathematics (University of Bergen) at a master and PhD level. The study compares the answers to a questionnaire, in which the students are asked to indicate the level of agreement to 12 statements, 6 regarding group supervisions, 6 regarding individualized (one-to-one) supervisions. Four levels of agreement were possible, ‘agree very much’, ‘agree to some degree’, constituting the positive replies, and ‘neither agree nor disagree’, ‘do not agree’, being the negative replies. In total, there were 14 students (six females and eight males) who returned the questionnaire.

Half of the female students (3) had a group supervision complemented by a one-to-one supervision. The other half (3) had one-to-one supervisions only. In the group of male students, 6 had a group supervision, complemented by one-to-one, and 2 had one-to-one supervisions only.

Although the number of participants in the study is too low to claim that the study has statistic relevance, some patterns related to gender emerge, especially for the first part of the questionnaire, regarding group supervisions. Below we study the answers in more detail.

*G1: "Groups, often dominated by men, may not adequately serve their educational need for women"*

To this question, all the males replied with neutral/negative answers (“Neither agree nor disagree”). Answers from female students had a different pattern. Three of them agreed to some degree, two did not agree at all, one did not reply. It is interesting to observe that those who did not agree were those students who did not take part in group supervisions. In other words, all female students who took part in group supervisions, were of the opinion that mixed-sex groups have a tendency to be dominated by men, thereby undermining their function in the educational need for women.



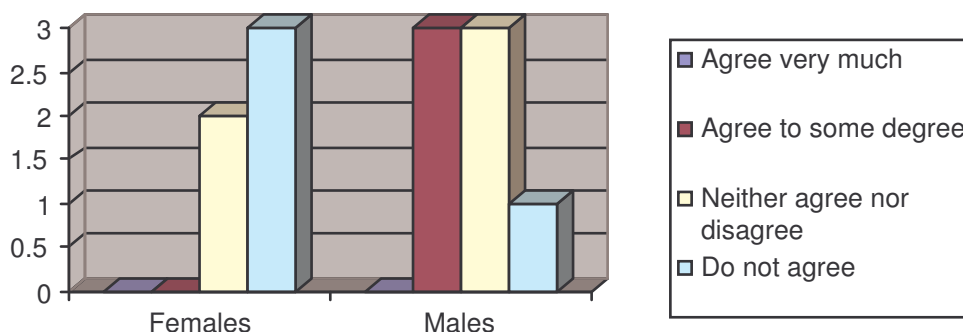
**Figure 1:** Graph chart of the replies to question G1. See text for details.

G2: *“In groups I can ‘hide’ myself more easily, if I am not sufficiently prepared”*

Here we wanted to test whether groups favour “free-riders”. This appears in part the case, as half replied that they agreed to some degree, while the other half neither agreed nor disagreed. In this question there were no significant difference between male and female students.

G3: *“In group supervisions it is easy to take the word to express ones’ own opinion”*

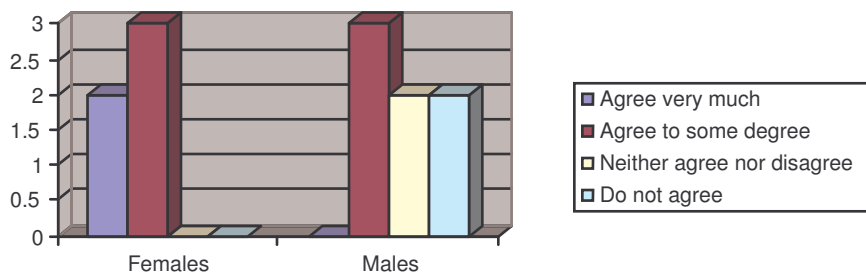
Male students’ replies span the whole spectrum, covering both positive and negative replies. All female students reply negatively, in other words, group dynamics does not particularly encourage females to take the word. The “indifferent” data come from females taking part in groups, the negative data from females not taking part in group supervisions.



**Figure 2:** Graph chart of the replies to question G3. See text for details

G4: *"Before taking the word, I must be confident that what I am going to say is correct"*

Half of the male students agree to some degree while the other half does not agree. All female students reply positively, in other words, female students are much more careful than their male counterparts before taking the word: they must be very confident that what they are going to say is correct.



**Figure 3:** Graph chart of the replies to question G4. See text for details

G5: *"If I were to choose, I would have had an only female/male group"*

All the replies were indifferent or negative, apparently, a single sex group is not of interest, not even for female students.

G6: *"In group discussions I get a good feedback for the status of my work"*

Most of the answers are positive (agree very much, agree to some degree). This indicates that students attribute a good formative value to group supervisions.

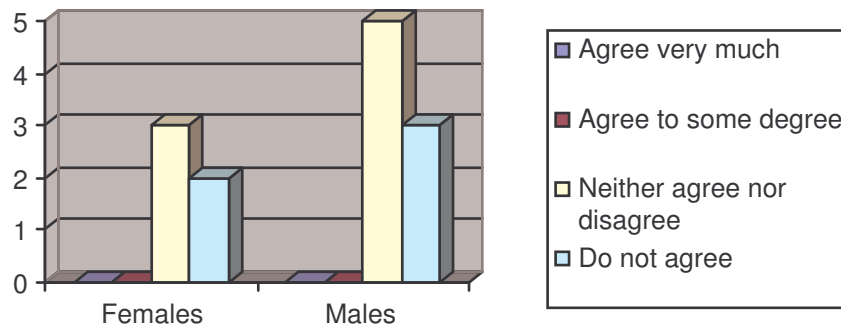
Below the questions regarding individual supervision:

I1: *"Under individual supervision I can really present my work as best I can"*

I2: *"Under individual supervision I feel very much at ease"*

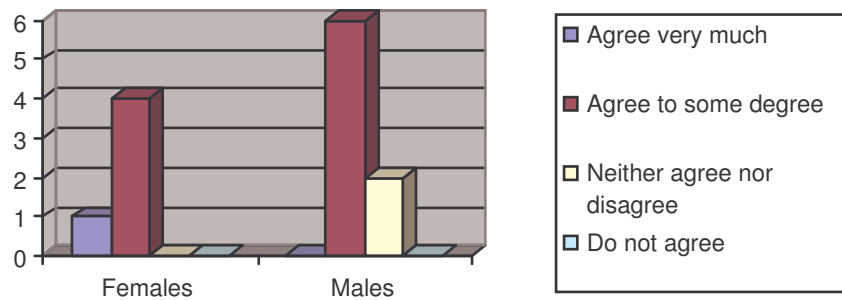
I3: *"Under individual supervision I get the most personalized feedback on my work"*

I4: *"If there were any, I would have chosen a supervisor of my same gender"*



**Figure 4:** Graph chart of the replies to question I4. See text for details.

I5: *“I chose my supervisor because he/she is the best person in the field I am interested in”*



**Figure 5:** Graph chart of the replies to question I5. See text for details.

I6: *“My supervisor is a sensible person and cares for his/her students”*

The answers regarding the individualized supervision were much more uniform. Most of the replies underlined that both female and male students felt at ease with this supervision form, and that they had the possibility of presenting their work to their best. They also agreed that they got the most personalized feedback for their work. They had a seemingly good relation with their supervisor, and regarded him (no students taking part in the survey were supervised by female staff members) as a sensible person that cares for his/her students. Most had chosen as supervisor a relevant person in the field he/she was interested in.

Interestingly, the replies were rather indifferent to having a supervisor of the same gender (had there been any). Literature studies indicate that some researchers argue that the

effects of female role models are overstated (Canes and Rosen 1995). On the other hand, it is also reported that male students underestimate female faculty members' professional competence (Luukkonen-Gronow and Stolte-Heiskanen 1983; Bagilhole 1993) and that women with male supervisors are most successful (O'Leary and Mitchell, 1990). It should be mentioned that at the time when the students taking part in this research started their degree, there were no female faculty members available for supervision. It would be interesting to repeat the same investigation with a larger sample of students and a large number of female faculty members.

## **Conclusions**

Although the number of participants in the survey is too low to get any reliable answers, the data show some tendencies and differences between male and female students. The majority of the students who have participated to this study have confirmed a positive attitude to support/discussion groups and are of the opinion that groups provide a good feedback for their work. However, it is clear also that in groups where there is a large number of male students, females might not always feel at ease – this might cause a failure of the group in its purpose. For a positive outcome, it is important that the person leading the group is aware of the complicated dynamics: some unconscious attitudes, like interrupting, ignoring or trivializing comments of female students, might have a negative effect on female participants. The students also appreciated the feedback they got in the one-to-one supervision form. To obtain the best result, the two forms of supervision should be complementary to each other.

The assumption regarding the role of a female supervisor and eventual benefits for female students was more difficult to test. The students taking part in the survey did not have the possibility of choosing among female supervisors at the time when they started, and had not had any female lecturers during the course of studies in mathematics at the undergraduate level. The present staff situation at the department of mathematics includes a female permanent and two temporary staff members. It would be interesting to perform a similar survey in the future with a larger number of students in collaboration with other mathematics departments in Norway.

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